

cussing the question of the motive power and deciding in favour of a gas-engine, the memorial goes on to state:—"It is suggested that Dr. Siemens, F.R.S., D.C.L., to whom the electric light owes much of its recent development, might with advantage be consulted in connection with this proposal. Whether a permanent institution or an experimental trial is in question, all parties concerned can have the most perfect confidence that everything will be done as it should be in his hands. It is suggested that an experimental trial should be first made, which could be done at comparatively little expense. The memorialists feel confident that if this is conceded the permanent adoption of the light will follow." The memorial is already signed by Professors Henry S. Smith, W. Acland, H. Nettleship, Sayce, Sir Gore Ouseley, and Mr. Warren De la Rue.

THE enterprising Naturalists Society of Dundee had a very successful dredging excursion off the mouth of the Tay and in St. Andrew's Bay on Wednesday last week. Considerable hauls were obtained of familiar denizens of the coast waters, though we regret to learn that under the influence of the gentle swell in St. Andrew's Bay several of the budding naturalists suffered some disturbance of their equanimity, and we fear were not able to do perfect justice to the dinner and tea which were liberally provided on board. At the annual meeting of this Society a satisfactory report was presented, though we do not altogether approve of the movement for the publication of abstracts of the proceedings of the Society in the form of a journal. Such publications, we are inclined to believe, are more gratifying to the vanity of provincial societies than conducive to the promotion of science in any way. We see the Society is uniting with several other Scotch societies to endeavour to obtain the benefit of the Gilchrist Lecture Trust; why do they not take a hint from the line of action in reference to a journal, and endeavour to bring about a union of the various Scottish natural history societies for this and other purposes?

A CORRESPONDENT of the *Scotsman* writes that a colony of rooks has taken possession of a garden which is next to St. Magnus Cathedral, Kirkwall, and built about a score of nests. It is only two or three seasons since rooks made their first appearance in Orkney, and it is supposed the absence of trees in the country districts has caused them to take up their abode in the centre of the town.

*Cotton* is the title of a new weekly journal for manufacturers and planters.

AN important discovery is stated to have been made in the neighbourhood of Sydney, New South Wales. Boring for coal has been going on in Moore Park for ten months, and about the middle of March a quantity of oily matter was observed to come up, one gush lasting half an hour. This liquid is believed to be crude kerosene, but the analysis was not complete when the last mail left.

THE *Reale Istituto Lombardo di Scienze e Lettere* at Milan offers the following prizes:—For a treatise on Miasma and Contagions (Term May 31, 1881), a prize of 1,500 lire and a gold medal worth 500 lire. For determining by experiments whether the virulent principle of hydrophobia is an organised germ or not, a prize of 6,000 lire (Term February 28, 1882). For a descriptive treatise on the Motor-centres of the Periphery of the Brain, the sum of 2,000 lire (Term April 1, 1881). For the illustration by new research of the etiology of cretinism and idiotism, 2,000 lire (Term May 31, 1882). Further details can be obtained by application to the Secretary of the Institution.

THE *Forester* is the title of a magazine published in connection with Nottingham High School, No. 7 of which has been sent us. The contents are varied, one paper being on the "Origin of Sandstones."

M. DEHAIRAN has opened the course of lectures that he is to deliver at the Museum d'Histoire Naturelle, on Vegetable Physiology. This chair has been recently created by M. Jules Ferry.

A SCIENTIFIC examination of the Ibaraki mountain range in Japan has resulted in the discovery of marble of different colours. One mountain is believed to be a mass of white statuary marble, and in another place black marble of the finest description was found.

THE additions to the Zoological Society's Gardens during the past week include a Black-faced Kangaroo (*Macropus melanops*) from South Australia, four Short-tailed Wallabys (*Halmaturus brachyurus*), three Vulpine Phalangiers (*Phalangista vulpina*), three white-backed Piping Crows (*Gymnorhina leuconota*) from West Australia, presented by Sir Harry St. George Ord, C.B., F.Z.S.; a Javan Chevrotain (*Tragulus javanicus*) from Java, presented by Mrs. L. Dudfield; a Brown Capuchin (*Cebus fatuellus*) from Guiana, an Ocelot (*Felis pardalis*) from South America, a Ring-tailed Lemur (*Lemur catta*) from Madagascar, presented by Mr. Chas. A. Craven; a Pinche Monkey (*Midas edipus*) from New Granada, presented by Mrs. Henry Druman Macaulay; a Long-eared Owl (*Asio otus*), British, presented by Mr. G. E. Dobson, C.M.Z.S.; an Eyed Lizard (*Lacerta ocellata*), an Æsculapian Snake (*Celuber æsculapii*), six Viperine Snakes (*Tropidonotus viperinus*) from San Remo, North Italy, presented by Lieut. L. L. Fenton; two Toco Toucans (*Ramphastos toco*) from Guiana, a Brown Passerine Owl (*Glaucidium phalenoides*), a Rusty Urubitinga (*Urubitinga meridionalis*), a Downy Owl (*Pulsatrix torquata*) from South America, deposited; two Guilding's Amazons (*Chrysotis guildingi*) from St. Vincent, West Indies, two Black-tailed Hawfinches (*Coccothraustes melanurus*) from Japan, four Golden Sparrows (*Auripasser euchlorus*) from Abyssinia, four Blood-breasted Pigeons (*Phlogoenas cruentata*) from the Philippine Isles, two Nightingales (*Daulias lusciniæ*), a Canary Finch (*Serinus canarius*), a Gannet (*Sula bassana*), British, purchased; a Black Wallaby (*Halmaturus ualabatus*), born in the Gardens.

### OUR ASTRONOMICAL COLUMN

THE LATE PROF. PETERS.—Prof. Christian August Friedrich Peters, whose death was mentioned last week, was the son of a merchant at Hamburg, and was born on September 7, 1806. His father's fortunes suffered in the war times, and his son's education was attended with difficulties, though he endeavoured to cultivate to the best of his power the natural bent for mathematical studies which was very early evinced. After some years the attention of Schumacher was drawn to the young Peters, and he employed him in various calculations for his ephemerides and geodetical works, and in 1826, and for several years subsequently, he was actively engaged in such operations at Hamburg and in Holstein, at the same time pursuing his studies and incidental employment under Schumacher. He then became for a time a pupil of Bessel, and in 1834 was appointed assistant in the observatory at Hamburg, whence in 1839 he was promoted to a position in the newly-founded Central Russian Observatory at Pulkowa, where he worked in theoretical and practical astronomy for ten years. In 1849 he was named Professor of Astronomy in the University of Königsberg, where he remained until 1854, in which year he was appointed to succeed Petersen in the direction of the observatory at Altona, and at the same time editor of the *Astronomische Nachrichten*, which he conducted up to the period of his decease. He removed to Kiel when the observatory at Altona was transferred to that place, and died there on the 8th inst., after a severe illness of many months' duration.

The works by which Prof. Peters was perhaps more widely known were his "Numerus constans Nutionis ex Ascensionibus Rectis Stellæ Polaris in Specula Dorpatensi Annis 1822 ad 1838 observatis deductus," which appeared in the *Transactions of the Imperial Academy of Sciences of St. Petersburg* in 1842, and the "Recherches sur la Parallaxe des Étoiles Fixes," printed in the same *Transactions* in 1846. For these important

memoirs he received the gold medal of the Royal Astronomical Society at the hands of Prof. J. C. Adams in 1852. His researches on the proper motion of Sirius also attracted much attention, and many other papers on various astronomical and mathematical subjects were contributed by him to the *Altona Journal*. His later work at Altona and Kiel chiefly bore upon the determination of differences of longitude; the last, "*Altona-Göttingen*," is to be detailed in a memoir to be published in a few weeks.

**MINOR PLANETS.**—Circular No. 136 of the *Berliner Astronomisches Jahrbuch* notifies the re-observation of *Hilda*, the most distant of the group of small planets yet known to us, and one which, with *Ismene* No. 190, must at times experience considerable perturbations from the action of Jupiter. It has been found at Pola as an object of 13.5 m., many degrees from the position assigned in the ephemeris last published, but there seems reason to suspect error of calculation. Thus if the elements of Dr. Kühnert in the *Berliner Jahrbuch* for 1880 are employed, though there is a later orbit, the error of the computed place is much less than that shown by the ephemeris in the Berlin Circular, No. 135. The difference of positions appears to indicate that the true period of revolution is even longer than has yet been calculated.

In the same Circular, No. 136, are new elements of *Philomela*, attributing to that planet an almost circular orbit, the angle of eccentricity being only  $0^{\circ} 18' 36'' \cdot 8$ , so that  $e = 0.005414$ , which is less than in the case of *Venus*.

*Medusa*, to which has been assigned the shortest period of any of the minor planet group, has apparently passed the last opposition without being re-observed, but in addition to much uncertainty as to position, it was likely to fall in a region of the sky which is crowded with small stars, and therefore a search would be attended with much trouble and difficulty.

*Vesta* should now be well discernible without the telescope, being in opposition and perihelion this year nearly at the same time, as we have before remarked, magnitude 5.9. The planet is in perihelion on May 28.

**COMET 1880, II.**—The following ephemeris is calculated from elements depending upon observations to May 8:—

| rel. G.M.T.            | R.A.          | Decl.      | Log. distance from the Earth. | Sun. |
|------------------------|---------------|------------|-------------------------------|------|
| h. m. s.               |               |            |                               |      |
| June 1 ... 6 29 32 ... | + 51 38.8 ... | 0.4108 ... | 0.2683                        |      |
| 3 ... 30 41 ...        | 50 52.4 ...   |            |                               |      |
| 5 ... 31 49 ...        | 50 7.0 ...    | 0.4168 ... | 0.2660                        |      |
| 7 ... 32 57 ...        | 49 22.7 ...   |            |                               |      |
| 9 ... 34 5 ...         | 48 39.4 ...   | 0.4221 ... | 0.2640                        |      |
| 11 ... 35 13 ...       | 47 57.0 ...   |            |                               |      |
| 13 ... 36 20 ...       | 47 15.6 ...   | 0.4267 ... | 0.2623                        |      |
| 15 ... 37 27 ...       | 46 35.0 ...   |            |                               |      |
| 17 ... 38 33 ...       | 45 55.2 ...   | 0.4307 ... | 0.2609                        |      |
| 19 ... 39 38 ...       | 45 16.1 ...   |            |                               |      |
| 21 ... 6 40 43 ...     | + 44 37.7 ... | 0.4340 ... | 0.2599                        |      |

### PHYSICAL NOTES

PROF. LEMSTRÖM, of Helingsfors, has recently described to the Physical Society of St. Petersburg a singular experiment which, unless otherwise explained by some of the circumstances of the experiment not yet published, must be regarded as a fundamental fact in the physical theory of electricity. He finds that a ring of insulating material when rotated about its axis of symmetry with a high velocity acts like a galvanic circuit, and produces a magnetic "field" in the space within it. Prof. Lemström is a disciple of Edlund, and regards this experiment as confirmatory of Edlund's theoretical views on the nature of electricity. According to Lemström, the ether in the insulator, being dragged along by the ring, produces vortical motion of the ether in the central space, which vortical motion he conceives to be the essential condition of a magnetic field. Arguing from these premises, Lemström proceeds to build up an ingenious theory of terrestrial magnetism. The converse operation of rotating an iron bar within a hollow insulating body or insulating medium ought also to produce magnetism in the bar. The earth being a magnetic body rotating in an insulating medium, ought to be magnetised by rotation about its axis, the axis being the axis also of magnetisation, unless the irregular internal disposition of the magnetic constituents produced an irregular distribution of the magnetism, or unless the distribution were affected by the induced magnetism due to movements of electricity in the atmo-

sphere, as in the *aurora*, or by the magnetism which would, on Lemström's theory, be generated by the revolution of the earth round the sun, and by the motion of the solar system through space.

M. DUMAS, who has been examining the property of certain metals in occluding gases, has found that aluminium may occlude as much as one and a half times its bulk of hydrogen gas, and also shows traces of carbonic acid. The gases were given up when the metal was heated to redness under exhaustion. Magnesium behaves similarly. Were these metals distilled *in vacuo* they could probably be obtained pure. It is possible that these observations may throw some light on the anomalous behaviour of aluminium when used as an electrode in the voltameter.

The cone of rays entering the eye from a peripheral point is never again united to one point, but it must present somewhere a minimum of cross section. The geometrical place of this minimum of cross section Herr Matthiessen (*Arch. f. Ophthalm.* (4) 25, 1879) designates the "theoretic retina." He finds that it is a spherical surface, the middle point of which coincides with the middle point of the corneal ellipsoid. To a distance of  $75^{\circ}$  from the fovea centralis the theoretical retina corresponds very exactly to the actual (according to the determinations of Arlt and Helmholtz). At greater distances the retina is formed hypermetropically, and so is within the "theoretic retina."

THE influence of magnetisation on the tenacity of iron has been lately studied by Signor Piazzoli (of the Catanian Academy of Sciences). Iron wires were hung between two hooks and ruptured by pouring water into a vessel suspended from them. They were about 350 mm. long, and were inclosed in a spiral with four windings one over another, which were either all traversed by a current in one direction, or two by a current in one direction, and two by an equal opposite current, so that in both cases the wires were equally strongly heated by the spiral, but in one case they were magnetised, in the other not. The weights required to break wires annealed in charcoal (weight of one metre,  $G = 0.299$ ) were, during magnetisation,  $P = 1260-1306$ ; without magnetisation,  $P' = 1213-1270$ . In the case of wires annealed in carbonic oxide (where  $G = 0.46$  g.),  $P = 1732.4 - 1742.7$ ;  $P' = 1703.62 - 1719.87$ . In the case of wires annealed in hydrogen  $P = 1289.5 - 1310.1$ ;  $P' = 1263 - 1299.7$ . In each separate series, accordingly, the difference  $P - P'$  was frequently less than the difference between the highest and lowest weights required for rupture of apparently identical wires; still, the mean values in each of the (14) series, were from about 1 to 3 per cent. greater for the magnetised than for the unmagnetised wires, showing that the tenacity of iron increases on magnetisation. This, it is remarked, need not be attributed to a change of cohesion of the iron, but may be due to ordinary magnetic attraction of the successive parts of the wires. In eleven out of fourteen cases the relative elongation of the magnetised wires at rupture was greater than that of the unmagnetised, in three cases less.

In a recent note to the Vienna Academy, Prof. Ludwig gives the results of the first of a series of observations on the decomposition of organic compounds by zinc powder. This relates to alcohols, and it is stated that in distillation of these over zinc powder heated to  $300 - 350^{\circ} \text{C.}$ , the higher ones—from ethylic alcohol upwards—are split up into the corresponding olefine and hydrogen. Under the same conditions methylic alcohol is decomposed simply (if the small quantities of marsh gas be neglected) into carbonic oxide and hydrogen. The similar decomposition of ethylic alcohol into marsh-gas, carbonic oxide and hydrogen, only occurs at a considerably higher temperature—with dark red glow. On the ground of these decompositions, which indicate that the combination of the carbon and the oxygen must be a very strong one, it is supposed that the decomposition of the higher alcohols is no simple reduction to the saturated hydrocarbons, from which, then, by separation of hydrogen, the olefines might arise, but that in the first phase of the process the alcohol is split up into the olefine and water, and that the hydrogen concentrated in the gases is due to a reduction of the generated steam by the zinc powder.

PROF. RIGHI has recently described to the Bologna Academy an arrangement of Holtz's electric machine, in which the whole machine except the handle and the electrodes is inclosed, along with a small friction machine for excitation, in a glass case tightly